

CONVERSION OF STATIC SOUR NATURAL GAS TO FUELS AND  
CHEMICALS

## ABSTRACT OF THE DISCLOSURE

[0038] A new cost effective and thermally efficient process for converting nearly valueless resources, such as "static," lower quality sour natural gas containing hydrogen sulfide, to useable fuels and chemicals, such as hydrogen, methanol and high cetane diesel fuel. The preferred method and apparatus can be used to treat conventional sour gas, i.e., gas having a ratio of  $H_2S$  to  $CH_4$  of at least 0.1 moles and preferably of at least 0.33 moles/mole, using a reforming catalyst and a sulfur capture agent. The process nominally can be carried out using two reactors that repeatedly cycle reactants between two basic process steps - reforming, and air regeneration.